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(54) **HLA-A24 BINDING CANCER ANTIGEN  
PEPTIDE DERIVED FROM LIVIN**

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See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2003/0087319 A1 5/2003 Gomes et al.  
2003/0157522 A1 8/2003 Boudreaux et al.  
2007/0036811 A1\* 2/2007 Straten et al. .... 424/185.1

**FOREIGN PATENT DOCUMENTS**

JP 2002-284797 A 10/2002

JP 2002-316998 A 10/2002  
WO WO 00/77201 A1 12/2000  
WO WO 03/040172 A2 5/2003  
WO WO 2004/089980 \* 10/2004

**OTHER PUBLICATIONS**

Schmollinger et al PNAS vol. 100 p. 3398 (2003).  
Essell (J. NIH Res. 1995 7:46).  
Spitler (Cancer Biotherapy, 1995, 10:1-3).  
Boon (Adv. Can. Res. 1992 58:177-210).  
Lee et al., J. Immunology vol. 163 p. 6296 (1999).  
Balch et al., Arch. Surg. vol. 125, pp. 200-205, (1990).  
Anichini et al., Immunology Today, vol. 8, No. 12, pp. 385-389, (1987).  
Muul et al., The Journal of Immunology, vol. 138, No. 3, pp. 989-995, (1987).  
Ioth et al., Int. J. Cancer, vol. 52, pp. 52-59 (1992).  
Rosenberg et al., Journal of the National Cancer Institute, vol. 86, No. 15, pp. 1159-1166 (1994).  
Van Der Bruggen et al., Science, vol. 254, pp. 1643-1647, (1991).  
Boon et al., Immunology Today, vol. 18, No. 6, pp. 267,268, (1997).  
Boon et al., J. Exp. Med. vol. 183, pp. 725-729 (1996).  
Robbins et al., Curr. Opin. Immunol., vol. 8 pp. 628-636 (1996).  
Vucic et al., Curr. Biol., vol. 10, No. 21, pp. 1359-1366 (2000).  
NCBI database Accession NO AAG33622, pp. 9.  
Rammensee et al., Immunogenetics, vol. 41, pp. 178-228 (1995).  
Kondo et al., J. Immunology, vol. 155, pp. 4307-4312 (1995).  
Kubo et al., J. Immunol. vol. 152, pp. 3913-3924, (1994).  
Kast et al., J. Immunol. vol. 152, pp. 3904-3912, (1994).  
Schmollinger JC. et al., Natl. Acad. Sci. USA., Mar. 18, 2003, vol. 100, No. 6, pp. 3398 to 3403.  
Kasof GM. et al., J. Biol. Chem. (2001), vol. 276, No. 5, pp. 3238 to 3246.

\* cited by examiner

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(57) **ABSTRACT**

The present invention provides a partial peptide consisting of 8-11 contiguous amino acids in the amino acid sequence of livin set forth in SEQ ID NO: 1, which binds to HLA-A24 antigen and is recognized by cytotoxic T cells (CTLs), a polynucleotide encoding the peptide, and cancer vaccine comprising the peptide or the polynucleotide.

**5 Claims, 2 Drawing Sheets**

**EXHIBIT 2**